

Applicant : Terence S. Dowling, et al.
Serial No. : 09/378,227
Filed : August 19, 1999
Page : 2 of 28

Attorney's Docket No.: 07844-322001 / P296

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) In a display system operable to display each of a plurality of pixels at a visual output intensity relative to an output display device according to a corresponding pixel input value, a method for determining device-specific information for pixels to obtain an optimal display of images on an output display device, the output display device having one or more color planes, the method comprising determining a set of device-specific pixel input values, based on user input, that will cause the display system to display a corresponding set of target visual output intensities relative to the output display device, the determining step including displaying a control region and a reference region on the output display device, the reference region being defined by a plurality of reference pixels, input values of the reference pixels being selected so that an average of visual output intensities of the reference pixels is a target visual output intensity, the control region being defined by a plurality of control pixels, each of the control pixels having a common pixel input value, evaluating the control region and reference region for each color plane of the display device, and adjusting the common pixel input value for the control pixels until a match is achieved between an appearance of the reference region and an appearance of the control region for each color plane, such that ~~the~~ target visual output intensities are achieved, wherein the control region is in proximity to the reference region.

2. (Original) The method of claim 1, further comprising determining a device-specific sub-pixel geometry for all the pixels of the output display device where each pixel includes a plurality of sub-pixels each defining a color component and a sub-pixel position associated with a given pixel, such that displaying for each of the plurality of pixels a selected

Applicant : Terence S. Dowling, et al.
Serial No. : 09/378,227
Filed : August 19, 1999
Page : 3 of 28

Attorney's Docket No.: 07844-322001 / P296

visual output intensity relative to the output display device at a sub-pixel position according to a corresponding pixel input value will cause the display system to display an optimal display of fine structure monochrome images on the output display device.

3. (Currently Amended) In a display system operable to display each of a plurality of pixels at a visual output intensity relative to an output device according to a corresponding pixel input value, a method for determining device-specific information for pixels, the method comprising:

obtaining a target visual output intensity;

establishing a reference region in a display device, the reference region being defined by a plurality of reference pixels;

selecting a pixel input value for each of the reference pixels from among a set of pixel input values for which the corresponding visual output intensities are known, the pixel input values being selected so that the average of the visual output intensities of the reference pixels is the target visual output intensity;

displaying the reference region with the selected pixel input values for the reference pixels;

displaying a control region on the display device, the control region being defined by a plurality of control pixels, each of the control pixels having a common pixel input value;

adjusting the common pixel input value in response to user input; and

associating the common pixel input value with the target visual output intensity when a user input indicates a match between the appearance of the reference region and the appearance of the control region, wherein the control region is in proximity to the reference region.

4. (Original) The method of claim 3, wherein the target visual output intensity is obtained from user input.

Applicant : Terence S. Dowling, et al.
Serial No. : 09/378,227
Filed : August 19, 1999
Page : 4 of 28

Attorney's Docket No.: 07844-322001 / P296

5. (Original) The method of claim 3, wherein the numeric value defining the size of the set of pixel input values is obtained from user input.

6. (Original) The method of claim 3, wherein the numeric value defining the size of the set of pixel input values is a pre-programmed numeric value.

7. (Original) The method of claim 3, wherein the pixel input value for each of the reference pixels are selected such that no perceived patterns are formed in the reference region.

8. (Original) The method of claim 7, wherein the perceived patterns are stripes.

9. (Original) The method of claim 7, wherein the perceived patterns are blocks.

10. (Original) The method of claim 3, further including a slider bar presented on a user interface so that based on user input, the common pixel input value may be adjusted between full on and full off, inclusive.

11. (Previously Presented) The method of claim 1, wherein the output display device is a color output display device.

12. (Original) The method of claim 3, further including locating the reference region and the control region in close proximity to each other.

13. (Original) The method of claim 3, wherein the number of pixels defining the control region is substantially smaller than the number of pixels defining the reference region.

14. (Original) The method of claim 3, wherein the reference region encloses the control region.

Applicant : Terence S. Dowling, et al.
Serial No. : 09/378,227
Filed : August 19, 1999
Page : 5 of 28

Attorney's Docket No.: 07844-322001 / P296

15. (Original) The method of claim 3, wherein the reference region and the control region are side-by-side.

16. (Original) The method of claim 3, further including evaluating a control region and reference region for each color plane of the display device and adjusting the common pixel input value to achieve a match between the appearance of the reference region and the appearance of the control region for each color plane.

17. (Previously Presented) In a display system operable to display a plurality of pixels, a method for determining device-specific information for pixels to obtain an optimal display of fine structure monochrome images on an output display device, the method comprising:

displaying a plurality of regions on the output display device, the displaying step including selecting a pattern for each region of the plurality of regions; and

determining a device-specific sub-pixel geometry from a plurality of possible sub-pixel geometries for all pixels of the output display device, based on user input selecting a region of the plurality of regions, where each pixel includes a plurality of sub-pixels each defining a color component and a sub-pixel position associated with a given pixel.

18. (Original) The method of claim 17, further comprising determining a set of device-specific pixel input values that will cause the display system to display a corresponding set of target visual output intensities relative to the output display device, such that displaying for each of the plurality of pixels a selected visual output intensity relative to the output display device at a sub-pixel position according to a corresponding pixel input value will cause the display system to display an optimal display of fine structure monochrome images on the output display device.

Applicant : Terence S. Dowling, et al.
Serial No. : 09/378,227
Filed : August 19, 1999
Page : 6 of 28

Attorney's Docket No.: 07844-322001 / P296

19. (Original) The method of claim 17, wherein determining the device-specific sub-pixel geometry, comprises:

displaying a plurality of regions, one for each possible sub-pixel geometry, each region including a pattern that is susceptible to color fringing depending on the sub-pixel geometry for the output display device; and
prompting a user to select a region.

20. (Original) The method of claim 19, wherein each region displayed includes two sub-regions comprising a first subregion including one or more colored lines on a colorless background and a second subregion including one or more colorless lines on a colored background.

21. (Original) The method of claim 20, wherein the first region includes one or more colored lines of a first color on a colored background of a second color and the second region includes one or more colored lines of the said second color on a colored background of said first color.

22. (Original) The method of claim 21, wherein the first region includes one or more black lines on a white background and the second region includes one or more white lines on a black background.

23. (Original) The method of claim 19, wherein each region displayed includes a pattern comprising vertical lines.

24. (Original) The method of claim 23, wherein the vertical lines are single pixel-wide vertical lines separated from the next vertical line by a plurality of pixels.

Applicant : Terence S. Dowling, et al.
Serial No. : 09/378,227
Filed : August 19, 1999
Page : 7 of 28

Attorney's Docket No.: 07844-322001 / P296

25. (Original) The method of claim 24, wherein the single pixel-wide vertical lines are composed of illuminated sub-pixels distributed over two adjacent pixels.
26. (Original) The method of claim 19, wherein each region displayed includes a pattern comprising intersecting diagonal lines.
27. (Original) The method of claim 26, wherein the intersecting diagonal lines are single pixel-wide diagonal lines.
28. (Original) The method of claim 27, wherein the single pixel-wide diagonal lines are composed of illuminated sub-pixels distributed over two adjacent pixels.
29. (Original) The method of claim 19, wherein the user is prompted to select the displayed region that evidences the least color fringing.
30. (Original) The method of claim 19, wherein the user is prompted to select the displayed region that evidences the most color fringing.
31. (Original) The method of claim 30, wherein the device-specific sub-pixel geometry is the complement of the sub-pixel geometry of the displayed region that evidences the most color fringing.
32. (Original) The method of claim 19, wherein only one of the displayed regions is free from color fringing.
33. (Original) The method of claim 32, wherein the user is prompted to select the displayed region that evidences the least color fringing.

Applicant : Terence S. Dowling, et al.
Serial No. : 09/378,227
Filed : August 19, 1999
Page : 8 of 28

Attorney's Docket No.: 07844-322001 / P296

34. (Original) The method of claim 32, wherein the user is prompted to select the displayed region that evidences the most color fringing.

35. (Original) The method of claim 34, wherein the device-specific sub-pixel geometry is the complement of the sub-pixel geometry of the displayed region that evidences the most color fringing.

36. (Original) The method of claim 19, wherein the number of sub-pixel geometries is dependent on the number of sub-pixels in a pixel.

37. (Original) The method of claim 36, wherein the number of sub-pixels is more than two and each sub-pixel defines a color component in a color space.

38. (Original) The method of claim 37, wherein the color space is the RGB color space.

39. (Original) The method of claim 37, wherein the color space is the CMYK color space.

40. (Original) The method of claim 19, wherein only one of the plurality of regions is displayed to the user at a time.

41. (Original) The method of claim 40, wherein a different region may be displayed to the user by toggling a button on a user interface.

42. (Original) The method of claim 17, wherein the sub-pixels are oriented for display on the output display device as a sequence of consecutive vertical color bars.

Applicant : Terence S. Dowling, et al.
Serial No. : 09/378,227
Filed : August 19, 1999
Page : 9 of 28

Attorney's Docket No.: 07844-322001 / P296

43. (Original) The method of claim 17, wherein the sub-pixels are rectangular-shaped.

44. (Original) The method of claim 17, wherein the sub-pixels are square-shaped.

45. (Original) The method of claim 17, wherein the sub-pixels are round-shaped.

46. (Currently Amended) In a display system operable to display each of a plurality of pixels at a visual output intensity relative to a liquid crystal display (LCD) device according to a corresponding pixel input value, a method for determining device-specific information for pixels to obtain an optimal display of images on a liquid crystal display (LCD) device, the LCD device having one or more color planes, the method comprising :

determining a set of device-specific pixel input values, based on user input, that will cause the display system to display a corresponding set of target visual output intensities relative to the liquid crystal display (LCD) device, the determining step including displaying a control region and a reference region on the liquid crystal display (LCD) device, the reference region being defined by a plurality of reference pixels, input values of the reference pixels being selected so that an average of visual output intensities of the reference pixels is a target visual output intensity, the control region being defined by a plurality of control pixels, each of the control pixels having a common pixel input value, evaluating the control region and the reference region for each color plane of the display device, and adjusting the common pixel input value for the control pixels until a match is achieved between an appearance of the reference region and an appearance of the control region for each color plane, such that ~~the~~ target visual output intensities are achieved, wherein the control region is in proximity to the reference region.

47. (Original) The method of claim 46, further comprising determining a device-specific sub-pixel geometry for all the pixels of the liquid crystal display (LCD) device where each pixel includes a plurality of sub-pixels each defining a color component and a sub-pixel

Applicant : Terence S. Dowling, et al.
Serial No. : 09/378,227
Filed : August 19, 1999
Page : 10 of 28

Attorney's Docket No.: 07844-322001 / P296

position associated with a given pixel, such that displaying for each of the plurality of pixels a selected visual output intensity relative to the liquid crystal display (LCD) device at a sub-pixel position according to a corresponding pixel input value will cause the display system to display an optimal display of fine structure monochrome images on the liquid crystal display (LCD) device.

48. (Original) The method of claim 46, wherein the liquid crystal display (LCD) device has a RGB color space.

49. (Previously Presented) In a display system operable to display a plurality of pixels, a method for determining device-specific information for pixels to obtain an optimal display of on a liquid crystal display (LCD) device, the method comprising:

displaying a plurality of regions on the liquid crystal display (LCD) device, the displaying step including selecting a pattern for each region of the plurality of regions; and determining a device-specific sub-pixel geometry from a plurality of possible sub-pixel geometries for all pixels of the liquid crystal display (LCD) device, based on user input selecting a region of the plurality of regions, where each pixel includes a plurality of sub-pixels each defining a color component and a sub-pixel position associated with a given pixel.

50. (Original) The method of claim 49, further comprising determining a set of device-specific pixel input values that will cause the display system to display a corresponding set of target visual output intensities relative to the liquid crystal display (LCD) device, such that displaying for each of the plurality of pixels a selected visual output intensity relative to the liquid crystal display (LCD) device at a sub-pixel position according to a corresponding pixel input value will cause the display system to display an optimal display of fine structure monochrome images on the liquid crystal display (LCD) device.

Applicant : Terence S. Dowling, et al.
Serial No. : 09/378,227
Filed : August 19, 1999
Page : 11 of 28

Attorney's Docket No.: 07844-322001 / P296

51. (Original) The method of claim 49, wherein the liquid crystal display (LCD) device has a RGB color space.

52. (Previously Presented) The method of claim 1, wherein the determining step further includes displaying a reference region on the output display device, the reference region being defined by a plurality of reference pixels, the displaying step including selecting a pixel input value for each of the reference pixels to produce a target visual intensity.

53. (Previously Presented) The method of claim 52, wherein the pixel input value for each of the reference pixels are selected such that no perceived patterns are formed in the reference region.

54. (Previously Presented) The method of claim 53, wherein the perceived patterns are stripes.

55. (Previously Presented) The method of claim 53, wherein the perceived patterns are blocks.

56. (Previously Presented) The method of claim 1, further including a slider bar presented on a user interface so that based on user input, the common pixel input value may be adjusted between full on and full off, inclusive.

57. (Previously Presented) The method of claim 52, further including locating the reference region and the control region in close proximity to each other.

58. (Previously Presented) The method of claim 52, wherein the number of pixels defining the control region is substantially smaller than the number of pixels defining the reference region.

Applicant : Terence S. Dowling, et al.
Serial No. : 09/378,227
Filed : August 19, 1999
Page : 12 of 28

Attorney's Docket No.: 07844-322001 / P296

59. (Previously Presented) The method of claim 52, wherein the reference region encloses the control region.

60. (Previously Presented) The method of claim 52, wherein the reference region and the control region are side-by-side.

61. Cancelled.

62. (Currently Amended) A computer-implemented method, comprising:

displaying a reference region in a display device, the reference region being defined by a plurality of reference pixels, the displaying step including selecting a pixel input value for each of the reference pixels to produce a target visual output intensity relative to the display device, the pixel input value for each of the reference pixels being selected so that an average of visual output intensities of the reference pixels is a target visual output intensity;

displaying a control region on the display device, the control region being defined by a plurality of control pixels, each of the control pixels having a common pixel input value;

adjusting the common pixel input value in response to user input until a visual match is achieved between the reference region and the control region, wherein the control region is in proximity to the reference region; and

associating the common pixel input value with the target visual output intensity.

63. (Previously Presented) The method of claim 62, wherein adjusting the common pixel input value includes:

presenting a user interface operable to change the common pixel input value;

prompting the user to change the common pixel input value using the user interface; and

prompting the user to indicate a visual match between the reference region and the control region.

Applicant : Terence S. Dowling, et al.
Serial No. : 09/378,227
Filed : August 19, 1999
Page : 13 of 28

Attorney's Docket No.: 07844-322001 / P296

64. (Currently Amended) A computer program product, tangibly stored on a computer-readable medium, for determining device-specific information for pixels to obtain an optimal display of images on an output display device, the output display device having one or more color planes, the computer program product comprising instructions operable to cause a programmable processor to:

determine a set of device-specific pixel input values, based on user input, that will cause the display system to display a corresponding set of target visual output intensities relative to the output display device, the instructions to determine including instructions to display a control region and a reference region on the output display device, the reference region being defined by a plurality of reference pixels, input values of the reference pixels being selected so that an average of visual output intensities of the reference pixels is a target visual output intensity, the control region being defined by a plurality of control pixels, each of the control pixels having a common pixel input value, evaluate the control region and reference region for each color plane of the display device, and adjust the common pixel input value for the control pixels until a match is achieved between an appearance of the reference region and an appearance of the control region for each color plane, such that the target visual output intensities are achieved, wherein the control region is in proximity to the reference region.

65. (Previously Presented) The computer program product of claim 64, further comprising instructions operable to cause the programmable processor to determine a device-specific sub-pixel geometry for all the pixels of the output display device where each pixel includes a plurality of sub-pixels each defining a color component and a sub-pixel position associated with a given pixel, such that the instructions to display for each of the plurality of pixels a selected visual output intensity relative to the output display device at a sub-pixel position according to a corresponding pixel input value will cause the display system to display an optimal display of fine structure monochrome images on the output display device.

Applicant : Terence S. Dowling, et al.
Serial No. : 09/378,227
Filed : August 19, 1999
Page : 14 of 28

Attorney's Docket No.: 07844-322001 / P296

66. (Currently Amended) A computer program product, tangibly stored on a computer-readable medium, for determining device-specific information for pixels, the computer program product comprising instructions operable to cause a programmable processor to:

obtain a target visual output intensity;

establish a reference region in a display device, the reference region being defined by a plurality of reference pixels;

select a pixel input value for each of the reference pixels from among a set of pixel input values for which corresponding visual output intensities are known, the pixel input values being selected so that an average of the visual output intensities of the reference pixels is a target visual output intensity;

display the reference region with the selected pixel input values for the reference pixels;

display a control region on the display device, the control region being defined by a plurality of control pixels, each of the control pixels having a common pixel input value;

adjust the common pixel input value in response to user input; and

associate the common pixel input value with the target visual output intensity when a user input indicates a match between an appearance of the reference region and an appearance of the control region, wherein the control region is in proximity to the reference region.

67. (Previously Presented) A computer program product, tangibly stored on a computer-readable medium, for determining device-specific information for pixels to obtain an optimal display of images on an output display device, the computer program product comprising instructions operable to cause a programmable processor to:

display a plurality of regions on the output display device, the displaying step including selecting a pattern for each region of the plurality of regions; and

Applicant : Terence S. Dowling, et al.
Serial No. : 09/378,227
Filed : August 19, 1999
Page : 15 of 28

Attorney's Docket No.: 07844-322001 / P296

determine a device-specific sub-pixel geometry from a plurality of possible sub-pixel geometries for all pixels of the output display device, and based on user input select a region of the plurality of regions, where each pixel includes a plurality of sub-pixels each defining a color component and a sub-pixel position associated with a given pixel.

68. (Previously Presented) The method of claim 67, wherein the instructions for determining the device-specific sub-pixel geometry, comprise instructions operable to cause the programmable processor to:

display a plurality of regions, one for each possible sub-pixel geometry, each region including a pattern that is susceptible to color fringing depending on the sub-pixel geometry for the output display device; and
prompt a user to select a region.

69. (Currently Amended) A computer program product, tangibly stored on a computer-readable medium, for determining device-specific information for pixels to obtain an optimal display of images on a liquid crystal display (LCD) device, the LCD device having one or more color planes, the computer program product comprising instructions operable to cause a programmable processor to:

determine a set of device-specific pixel input values, based on user input, that will cause a display system to display a corresponding set of target visual output intensities relative to the liquid crystal display (LCD) device, the instruction to determine including instructions to display a control region and a reference region on the liquid crystal display (LCD) device, the reference region being defined by a plurality of reference pixels, input values of the reference pixels being selected so that an average of visual output intensities of the reference pixels is a target visual output intensity, the control region being defined by a plurality of control pixels, each of the control pixels having a common pixel input value, evaluate the control region and the reference region for each color plane of the display device, and adjust the common pixel input value for the control pixels until a match is achieved between an appearance of the reference region and an

Applicant : Terence S. Dowling, et al.
Serial No. : 09/378,227
Filed : August 19, 1999
Page : 16 of 28

Attorney's Docket No.: 07844-322001 / P296

appearance of the control region for each color plane, such that the target visual output intensities are achieved, wherein the control region is in proximity to the reference region.

70. (Previously Presented) The computer program product of claim 69, further comprising instructions operable to cause the programmable processor to determine a device-specific sub-pixel geometry for all the pixels of the liquid crystal display (LCD) device where each pixel includes a plurality of sub-pixels each defining a color component and a sub-pixel position associated with a given pixel, such that the instructions to display for each of the plurality of pixels a selected visual output intensity relative to the liquid crystal display (LCD) device at a sub-pixel position according to a corresponding pixel input value will cause the display system to display an optimal display of images on the liquid crystal display (LCD) device.

71. (Previously Presented) A computer program product, tangibly stored on a computer-readable medium, for determining device-specific information for pixels to obtain an optimal display of images on a liquid crystal display (LCD) device, the computer program product comprising instructions operable to cause a programmable processor to:

display a plurality of regions on the liquid crystal display (LCD) device, the instructions to display including instructions to select a pattern for each region of the plurality of regions; and

determine a device-specific sub-pixel geometry from a plurality of possible sub-pixel geometries for all pixels of the liquid crystal display (LCD) device, and based on user input select a region of the plurality of regions, where each pixel includes a plurality of sub-pixels each defining a color component and a sub-pixel position associated with a given pixel

72. (Currently Amended) A computer program product, tangibly stored on a computer-readable medium, comprising instructions operable to cause a programmable processor to:

display a reference region in a display device, the reference region being defined by a

Applicant : Terence S. Dowling, et al.
Serial No. : 09/378,227
Filed : August 19, 1999
Page : 17 of 28

Attorney's Docket No.: 07844-322001 / P296

plurality of reference pixels, the instructions to display including instructions to select a pixel input value for each of the reference pixels to produce a target visual output intensity relative to the display device, the pixel input value for each of the reference pixels being selected so that an average of visual output intensities of the reference pixels is a target visual output intensity;

display a control region on the display device, the control region being defined by a plurality of control pixels, each of the control pixels having a common pixel input value;

adjust the common pixel input value in response to user input until a visual match is achieved between the reference region and the control region, wherein the control region is in proximity to the reference region; and

associate the common pixel input value with the target visual output intensity.